

REMARKS

This amendment is responsive to the Office Action of March 21, 2007. Reconsideration and allowance of claims 2, 4, 5, 7, 8, and 10-23 are requested.

The Office Action

Claims 1-11 stand rejected under 35 U.S.C. § 102 as being anticipated by Wu (US 6,591,128).

The Prior Art

Wu is exemplary of the acknowledged prior art in the Background section of the present application and does not disclose the concepts which the present application intends to protect. Wu includes a main magnet **10** for generating a main magnetic field through an examination space **12** and a whole-body coil **36** which, in a transmit mode, transmits RF excitation pulses into the examination space. In some applications, the whole-body coil **36** can be used for both transmit and receive.

In another embodiment, a local coil, particularly a head coil **40**, is removably attached to the patient table. With the patient table and coil withdrawn from the examination space, the face portion of the coil is removed and the patient is positioned on the table with his/her head resting on the lower portion of the head coil. The cover piece is then replaced and the patient table is moved into the bore until the head coil is at a selected location, e.g., the isocenter of the examination space. In this embodiment, the whole-body coil **36** acts as the transmit coil and the head coil **40** acts as a dedicated receive coil.

Wu, like many MRI patents, illustrates the functional components. That is, the components which function to generate the magnetic field, excite resonance, receive resonance, process the resonance into an image, etc. However, in many, probably most, magnetic resonance imaging utility patents, the cosmetic features are omitted for simplicity of illustration. One of these omitted structures which is not illustrated in Wu which would be in the commercial product is the cover plate or bore liner.

The cover plate or bore liner in a bore-type magnetic resonance imager is generally a cylindrical plastic element which separates the patient from the high

voltage and high current electrical components such as the whole-body coil **36** and the gradient coils including the x, y, and z-primary gradient coils **32** and the shield coils **34**.

What Wu, like many patents, does not illustrate is the work of many talented industrial designers who design the bore liner and other housing elements to have an aesthetically pleasing appearance. The work of these industrial designers is shown on the web pages of the various MRI manufacturers. The applicants had considered providing the Examiner with the web page addresses for the MRI equipment of the various MRI manufacturers, but the addresses are extremely long and tedious. Rather, the undersigned requests the Examiner's indulgence to use a search engine, such as Google™, to search the terms "Philips MRI", "GE MRI", "Siemens MRI", and the like for other manufacturers. All of these web pages show the current commercial products of these manufacturers, which commercial products all include a cover plate or bore liner, but which cover plate or bore liner is rarely illustrated in the utility patents which protect these products.

The Present Application

Magnetic resonance imaging systems typically include a quadrature whole-body transmit/receive coil (QBC). Note, for example, the whole-body transmit/receive coil **36** of Wu and the first paragraph of page 2 of the present application. In order to improve performance, a local coil or dedicated receive coil (DRC) (note the local DRC head coil **40** of Wu) are often placed on the body to receive the MRI signals. (Note the second and third paragraphs of page 2 of the present application).

As pointed out in the third and subsequent paragraphs of page 2, one problem with local coils is that their position is not precisely known to the image reconstruction system. This positional uncertainty is particularly important in SENSE and other types of imaging in which the reconstruction algorithm relies on a precisely known position of the coil for its accuracy, e.g., FLASH.

Other problems with local coils relate to handling the coils during which the coils may be damaged or broken. Another problem with local coils relates to

patient friendliness. Coils strapped to or wrapped around a portion of the patient can be uncomfortable and confining (see page 3, third paragraph).

**The Claims Distinguish Patentably
Over the References of Record**

Claim 7 cures the above-referenced problems by fixedly attaching the dedicated receive coil to a cover plate which is a detachable portion of the housing. In Wu, there is no suggestion of attaching the local coil **40** to the cover plate or bore liner (which has been removed from the drawings for simplicity of illustration). Rather than being affixed to the bore liner or cover plate, the local coil **40** of Wu is closed around the patient's head and supported on the patient table. Accordingly, it is submitted that **claim 7 and claims 2, 4, 5, 8, 10, and 11 dependent therefrom** distinguish patentably and unobviously over the references of record.

Claim 2 emphasizes the differences still more by calling for the dedicated receive coils to be located at fixed positions. By distinction, the head coil **40** of Wu is movably positioned between a patient loading and unloading position and an imaging position. Due to operator error, the exact position of the head coil of Wu may be offset from the position in which the image reconstruction system believes it to be.

Claim 5 emphasizes the differences still further by calling for the dedicated receive coil to be integrated into the cover plate portion of the housing. By distinction, the removable head coil **40** of Wu is displaced from and is not a part of the MRI system housing. The receive coil in the removable head coil of Wu is not integrated into a cover plate or bore liner (not illustrated in the Wu drawings).

Claim 8 calls for the cover plate to include segments which are coupled to each other by hinges. By contrast, traditional cover plates or bore liners of bore-type MRI imagers are typically cylindrical sleeves without hinges.

Claim 10 calls for the MRI system to be configured to perform SENSE imaging and for the receive coils to have their antenna elements in fixed locations.

Claim 11 calls for one or more additional receive coils to be mounted in, under, or fixed to the patient table. By contrast, the dedicated receive coils of Wu are in the head coil supported on the patient table.

Claim 12 focuses on a bore-type scanner in which the cover plate or bore liner is a cylindrical element which separates the high power electrical components

from the examination space. The corresponding bore liner of Wu has not been illustrated for simplicity of illustration. Claim 12 further calls for the dedicated receive coils to be affixed to the bore liner. By distinction, Wu's dedicated receive coils are displaced from the bore liner and supported on the patient table well displaced from where the bore liner would be. Accordingly, it is submitted that **claim 12 and claims 13-16 dependent therefrom** distinguish patentably and unobviously over the references of record.

Claim 17 calls for the cover plate to include at least one electrically insulating element disposed between the examination space and the high power electrical components, such as the whole-body transmit coil. Such an insulating structure between the whole-body RF coil **36** of Wu and the examination space **12** is not shown in Wu. Moreover, claim 17 calls for the dedicated receive coils to be mounted to such cover plate. By distinction, the dedicated receive coil **40** of Wu is disposed remote from the edges of the examination space adjacent the whole-body coil **36** to the center of the examination space and positioned closely adjacent to the patient's head. Accordingly, it is submitted that **claim 17 and claims 18-23 dependent therefrom** distinguish patentably and unobviously over the references of record.

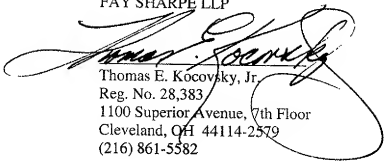
CONCLUSION

For the reasons set forth above, it is submitted that claims 2, 4, 5, 7, 8, and 10-23 distinguish patentably over the references of record and meet all statutory requirements. An early allowance of all claims is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, she is requested to telephone Thomas Kocovsky at (216) 861-5582.

Respectfully submitted,

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